atr | smart procedures
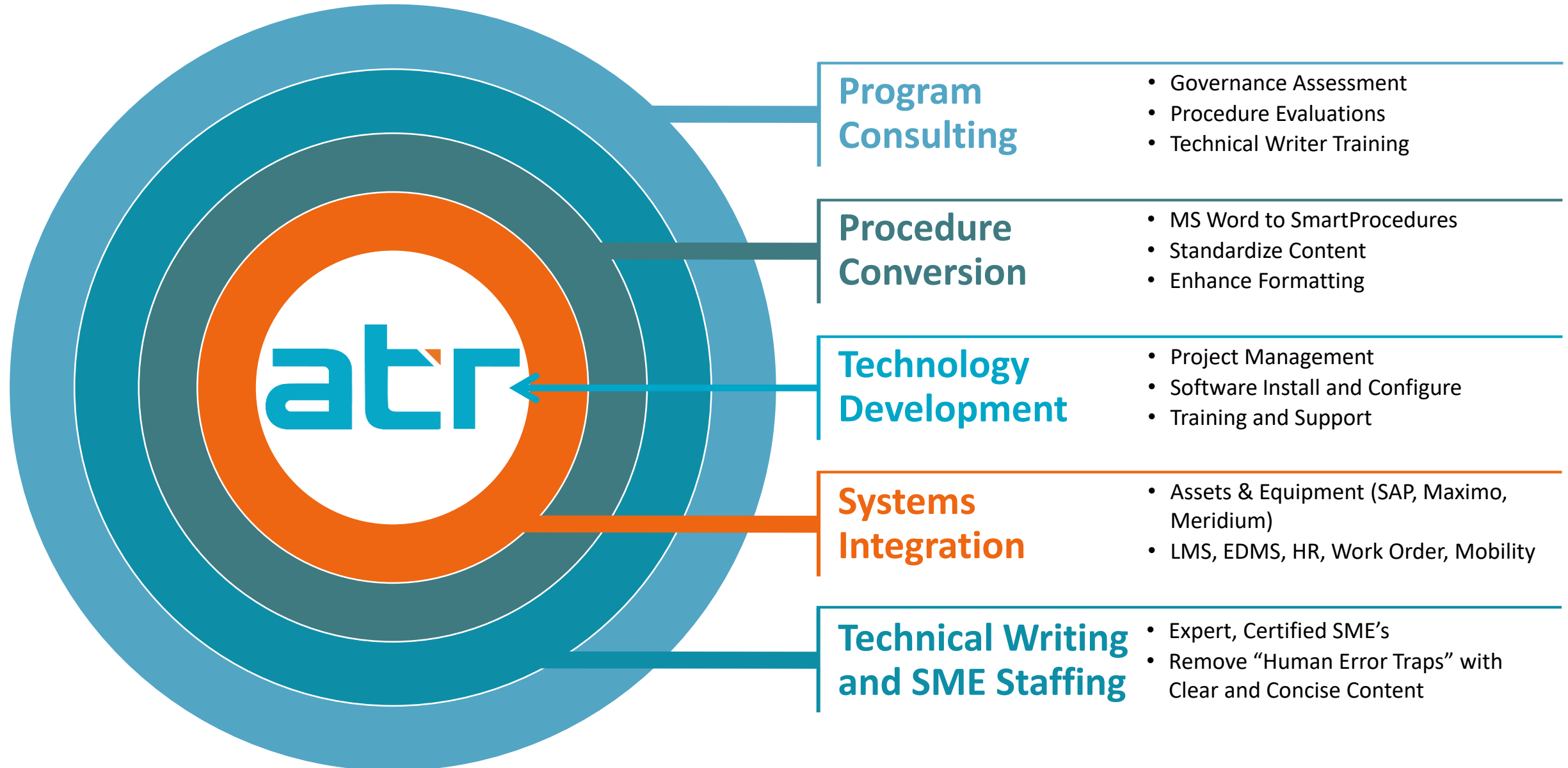
The Global Leader in Advanced Procedure Lifecycle Technologies

SmartProcedures General Overview

Capabilities Ecosystem

Program Consulting
- Governance Assessment
- Procedure Evaluations
- Technical Writer Training

Procedure Conversion
- MS Word to SmartProcedures
- Standardize Content
- Enhance Formatting

Technology Development
- Project Management
- Software Install and Configure
- Training and Support

Systems Integration
- Assets & Equipment (SAP, Maximo, Meridium)
- LMS, EDMS, HR, Work Order, Mobility

Technical Writing and SME Staffing
- Expert, Certified SME's
- Remove "Human Error Traps" with Clear and Concise Content

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Limitations of Current Procedure Practices

1 Procedures are **"One-size-fits-all"** and cannot adapt to individualized needs or functions.

2 Companies don't have or enforce **"use & adherence policy"** governing procedure usage.

3 **Paper output only.**

4 **Not fit for purpose.**

5 **Too much detail**, or **too little detail.**

6 Focus on **compliance versus performance.**

7 **No electronic enforcement** of best practices for standardization.

8 **High cost of global procedure library changes** (e.g. templates, views, content).

9 **Non-integrated systems** (e.g. MS Word, document control, workflow approvals).

10 **High manpower cost of formatting.**

11 **Poor usage.**

12 **Operators lack trust in procedures** that are not up-to-date or easily accessible.
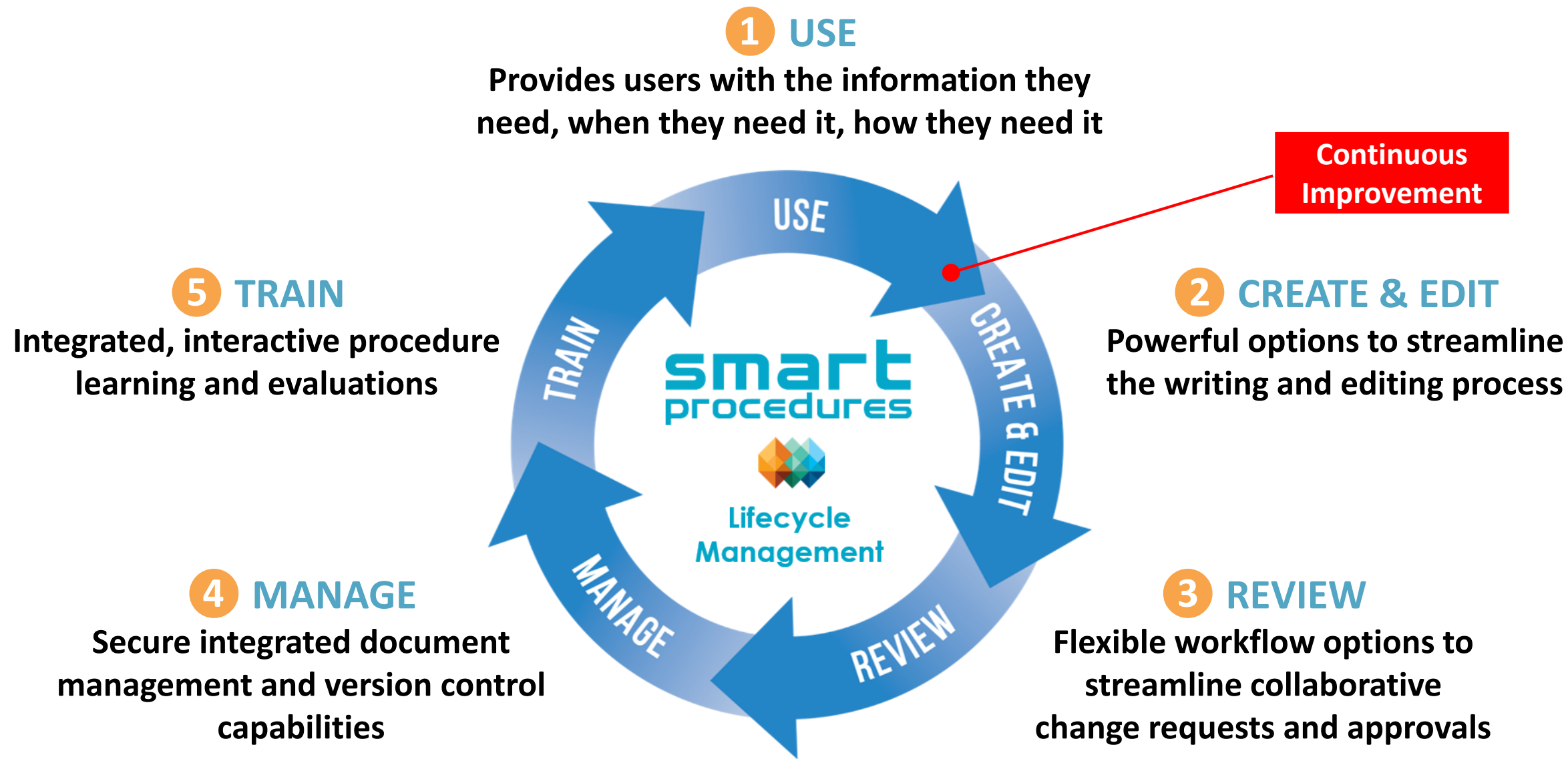
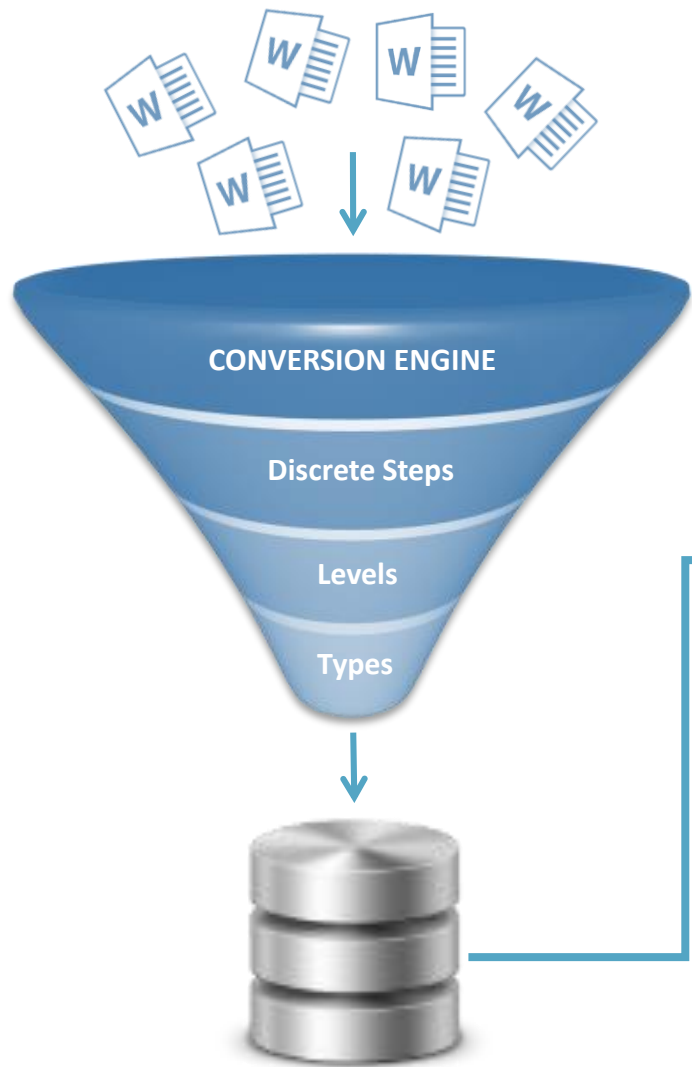**13** **Procedures and training are in separate silos**, creating more work.

14 Data collection or digitization of **execution data is non-existent.**

15 Guidelines are often based on **legacy practices** versus human factor-based empirical science.
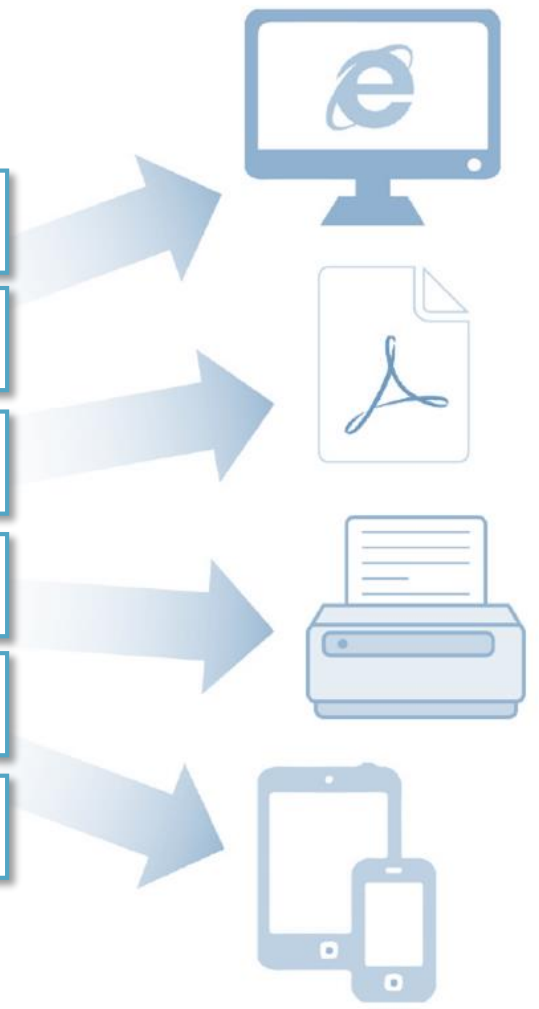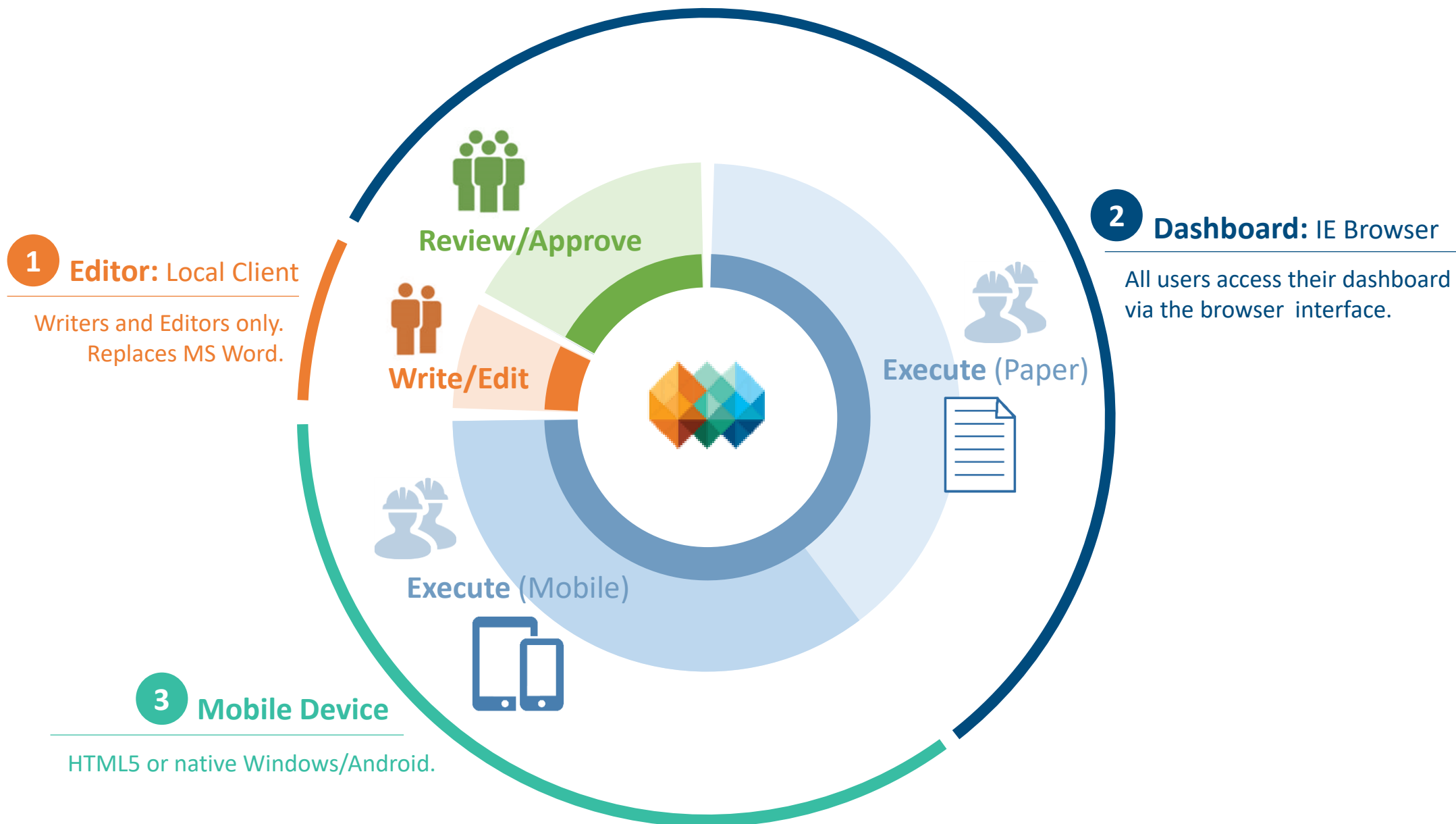
Procedure Risk Scale

Operational Excellence

Lowered Risk

Increased Safety

Minimal Compliance

Excellent
- Executive level leadership
- Integrated lifecycle management
- Global cascading changes
- Electronic enforcement best practices
- Automated interactive and multimedia training
- Flexible output

Best-in-Class Sustainable Technology-Enabled

Fair
- Human factored
- Risk-ranked
- Management level leadership
- Defined and followed processes
- Usage accountability
- Continuous improvement

Nuclear Industry

Poor
- Somewhat consistent
- Good coverage
- Document management systems
- Procedure change process (MOC)
- Periodic review process
- Easy accessibility

Status Quo

High Risk
- Inconsistent
- Poor accessibility and coverage
- Poor MOC
- Paper-format
- Poor usage culture
- Poor management systems

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1 USE

Provides users with the information they need, when they need it, how they need it

Continuous Improvement

5 TRAIN

Integrated, interactive procedure learning and evaluations

2 CREATE & EDIT

Powerful options to streamline the writing and editing process

USE
CREATE & EDIT
REVIEW
MANAGE
TRAIN

smart procedures

Lifecycle Management

4 MANAGE

Secure integrated document management and version control capabilities

3 REVIEW

Flexible workflow options to streamline collaborative change requests and approvals

Digitizing Procedure Content

CONVERSION ENGINE

Discrete Steps

Levels

Types

smart procedures

Step 2.1

ENSURE boiler feed water pump switchgear is energized.

Programmatic formatting is driven by step-level properties:

Properties

Step Type: Action

Role: Operator (OP)

Risk: High

Equipment: B8051BW

Media: Pump100.jpg

Op. Limit: Discharge pressure (P200)

Accessing SmartProcedures Functionality

1 **Editor:** Local Client

Writers and Editors only.
Replaces MS Word.

2 **Dashboard:** IE Browser

All users access their dashboard
via the browser interface.

3 **Mobile Device**

HTML5 or native Windows/Android.

Review/Approve

Write/Edit

Execute (Paper)

Execute (Mobile)

Industry 4.0 / IoT

Work Order System

- Work order procedures
- Task/procedure sign-off reports

- Content Management
- Configuration engineering
- Integration
- Document conversion
- Technical writing
- Project management
- Training

Equipment/Asset Database

- Equipment data source
- Pre-job equipment status reports

DCS/SCADA Systems

- Live Data
- Context-sensitive procedures
- Alarm response procedures

- Document repository
- Managed attachments/diagrams

smart procedures

Document/Content Management System

- Step executable procedures
- Collaborative sessions
- Real-time data capture
- Advanced capabilities

- Qualification for task performance
- Performance evaluations
- Interactive procedure training data

Mobility Solutions

Reports and Analytics

Learning Management

Major Features

- Solid foundational components are required to provide effective enterprise procedure management

- Operating at scale requires these components to work seamlessly

- Additional features and functionality enhances the foundation

Mobile Procedures

SAM Expert Analyzer

Multilingual Editor

Interactive Training/CBT

Structured Authoring

Global Changes

Equipment/ Operating Limits

Reports & Notifications

Procedure Workflow

PROCEDURE IMPORT

CONTENT DATABASE

ELECTRONIC GOVERNANCE

CHANGE MANAGEMENT

FLEXIBLE OUTPUT

Procedure Import to SmartProcedures

Conversion to Database

- MS Word or HTML documents are converted into SmartProcedure XML format
- Multiple filters and algorithms:
  - Identifies sections
  - Creates discrete steps
  - Determines step type
  - Removes MS Word hard-coding
  - classifies steps into step types
  - Creates section and step hierarchies
- Dedicated ATR conversion team manages the import process on a fixed-cost basis
- Content is not altered
- Multiple QA checks
- Fixed cost
- Guaranteed accuracy

Document Analysis

Design Output Requirements

System Configuration

Create Filters

CONVERSION ENGINE

Discrete Steps

Levels

Types

Procedure content is stored as structured data (SQL database).

smart procedures
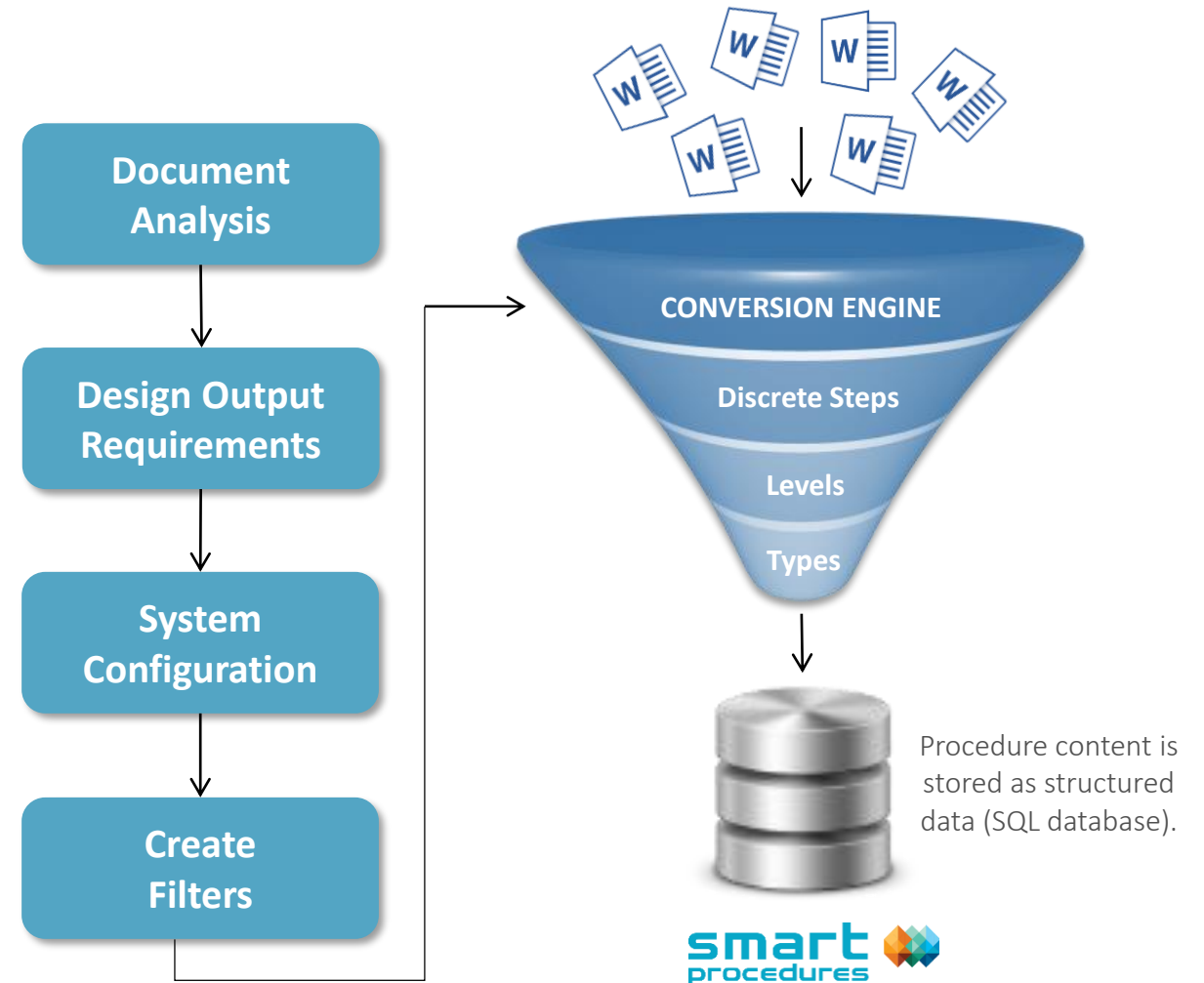
Structured Authoring Tool

- Database technology manages content, not documents
  - Saves time
  - Reduces administrative burden
  - Improves accuracy
  - Drives consistency
- Building block manager for re-usable content that can be shared across procedures - Toolbox may include:
  - Steps, sections, and entire procedures
  - Acronym Library
  - Hazards Library
  - Unit Ops Library
  - Notes/Cautions/Warnings
  - Tools/Equipment Library
  - Universal Glossary

smart
procedures

Managed content is assembled into procedures.

A
1
2
3
4
5

B
1
2
3

C
1
2
3
4

D
1
2

Electronic Enforcement
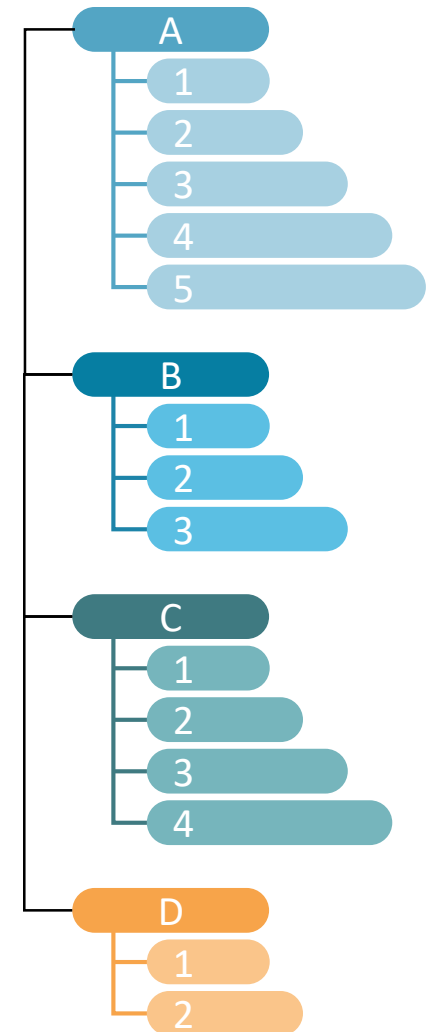
Control Formatting and Style Guidelines

- Locks down critical properties to ensure standardization, consistency, and adherence to best practices
- Pre-configured templates for each procedure type - properties include:
  - Overall structure
  - Boilerplate and shared steps
  - Enforced formatting and style rules
  - Allowed step-levels
  - Numbering schema
  - Associated print views (FlexViews)
  - Periodic review schedule
  - Automated cascaded changes
- Eliminates formatting challenges
- Eliminates variances between writers
- Enables global change capability across all affected procedures

Step Numbering

Procedure Type Structure

Font and Point Size

Layout and Format

Writing Rules

Action Word Emphasis

Allowable Step Levels

Icon Usage

Style Settings
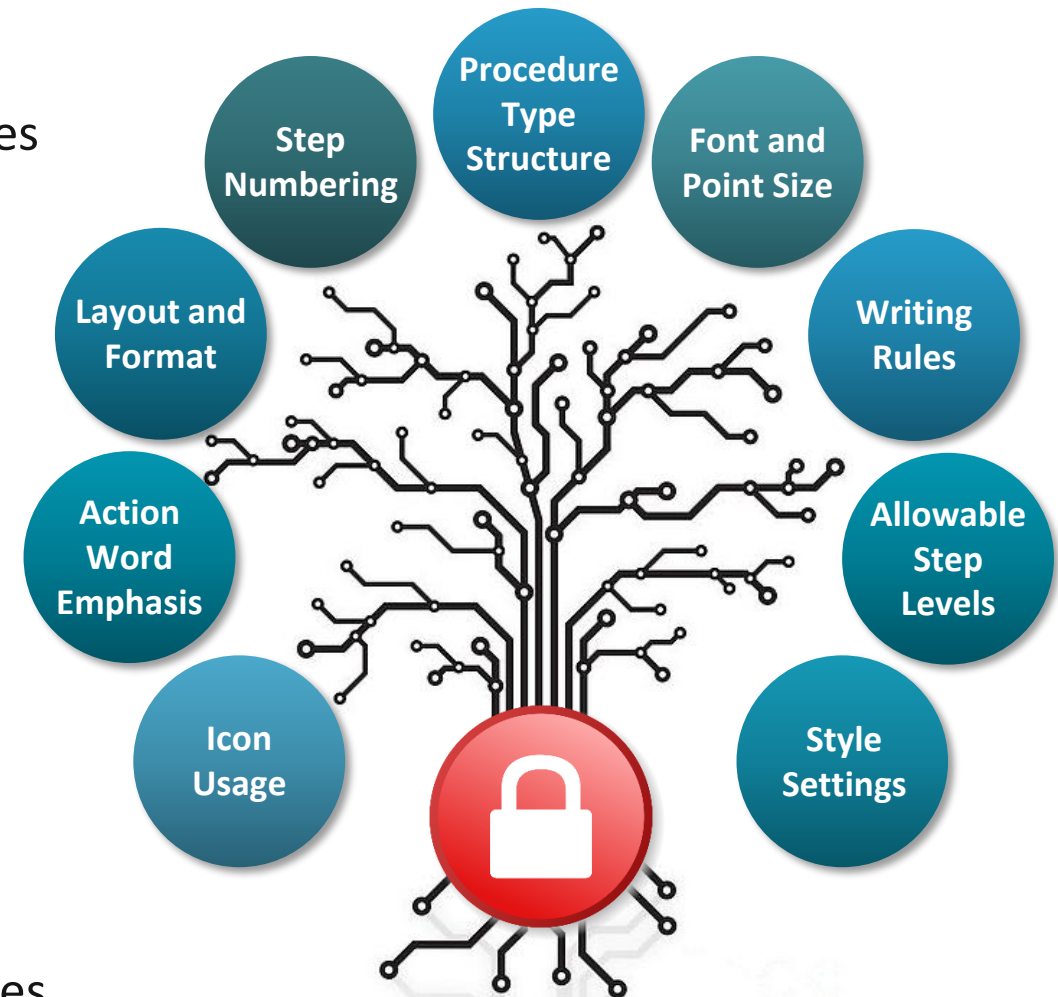
Global Changes

- Administrate changes to global components like:
  - Equipment data
  - Operating limit data
  - Global reference objects
  - Shared Steps (building blocks)
  - Procedure type templates
  - Company and divisional logos
  - Step numbering
- Generate impact analysis reports showing which procedures are affected
- Automatic revisions of affected procedures reduces costs and resource loading
- Option to require MOC approval or automate
- Affected procedures reflect change in revision notes

Standard EHS Statement

Only authorized administrators can modify global objects.

smart procedures

IMPACT ANALYSIS REPORT

Impact Analysis reports identify procedures containing the global object.

Multiple Procedures Containing Shared "Global Object"
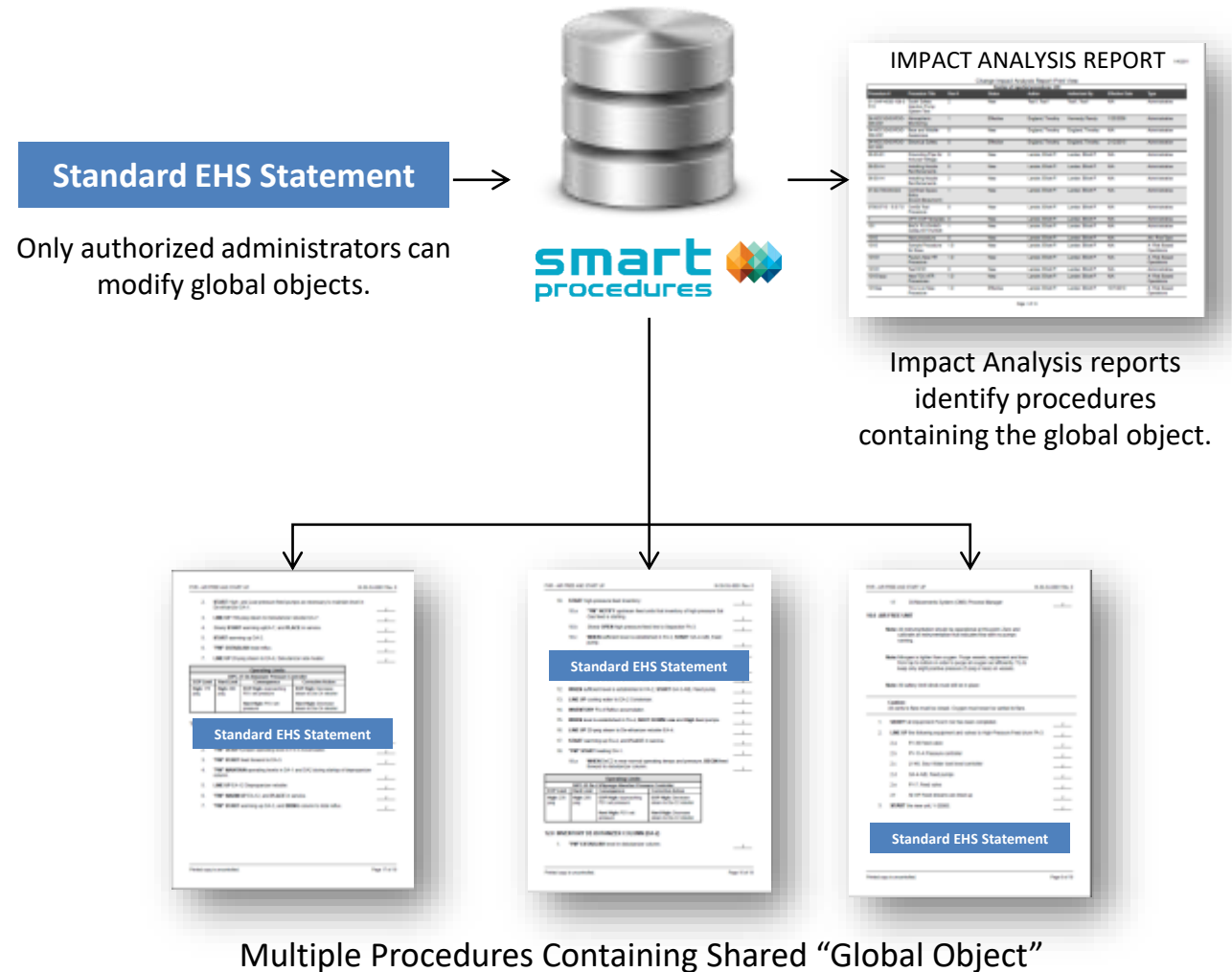
Integrate Equipment and Operating Limits

- Seamless integration to asset database and operating conditions
- Automatic formatting of limits tables
- Equipment and limits are linked to steps
- Automate revision updates for changes
- Step association

26BA02FX Heater Flux			
EOP		**Consequence**	**Corrective Action**
High	13,000 British thermal units	Design limit of equipment.	1. "PM" LOWER firing of BA-2602 heater. 2. "PM" LOWER feed/effluent exchanger H22 bypass using 26TC-357 to lower required firing duty on heater.
Low	5,000 British thermal units	Low flow.	Restart heater.

Step Analyzer Module (SAM)

Expert Step Analyzer

- Automatic writing analysis promotes standardization and reduces human-error precursors
- Scans procedure content in seconds
- 100's of configurable risk-ranked rules
  - Industry best practices
  - Regulatory
  - Company standards
- Scoring algorithm
- Risk-ranked report of violations
- Flesh Kincaid complexity/reading level
- Provides recommendations
- Builds writer competency over time

Multilingual
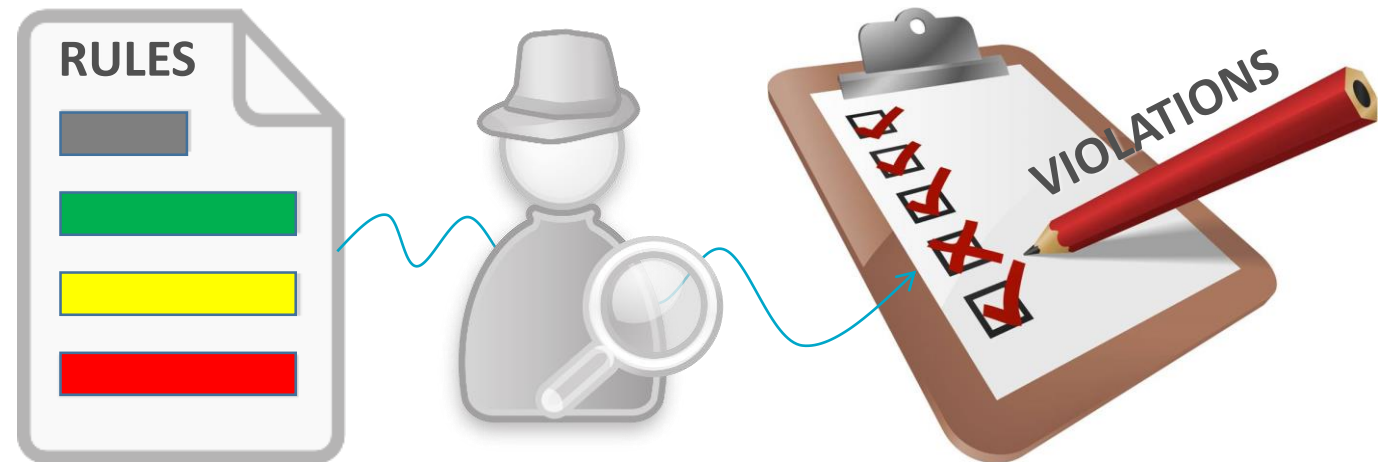
- Support for authoring/saving/displaying procedure content in any number of user selected languages

- Procedure metadata is engineered to have data layer language and culture specifiers which will ensure one procedure can be created and published in multiple languages

- Allows for custom language dictionaries by language, department, geophysical location

- Currently support rendering of application strings in 251 languages

- Ability to import/export all data strings to Excel for streamlined translation

- Auto-translation algorithm uses the Azure Cognitive Science APIs to auto-translate.

Procedure Change Workflow
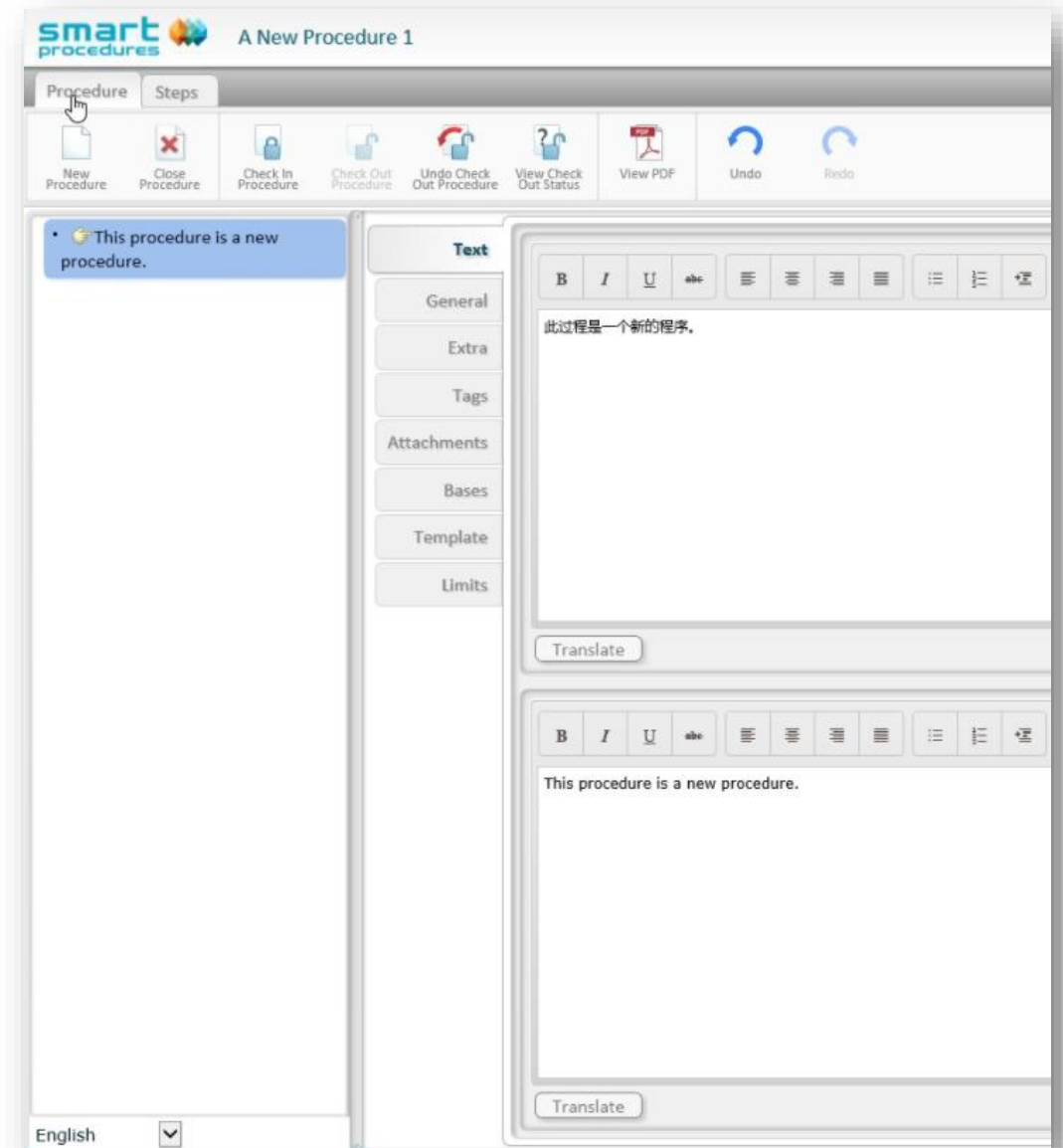
Preconfigured Review/Approval Workflows

- Unlimited reviews based on procedure type and change severity
- Templates and rules drive workflow
- Change requests:
  - Multiple ways for operators to submit
  - Routed to procedure owner/supervisor for disposition
  - Can be merged to launch procedure workflow cycles
- Checklist logic enabling/disabling requirements
- Email notifications/reminders to reviewers/approvers
- Parallel/sequential routing
- Links take reviewers directly to the changes
- Collaborative annotations
- Overdue notifications
- Detailed status reports for visibility
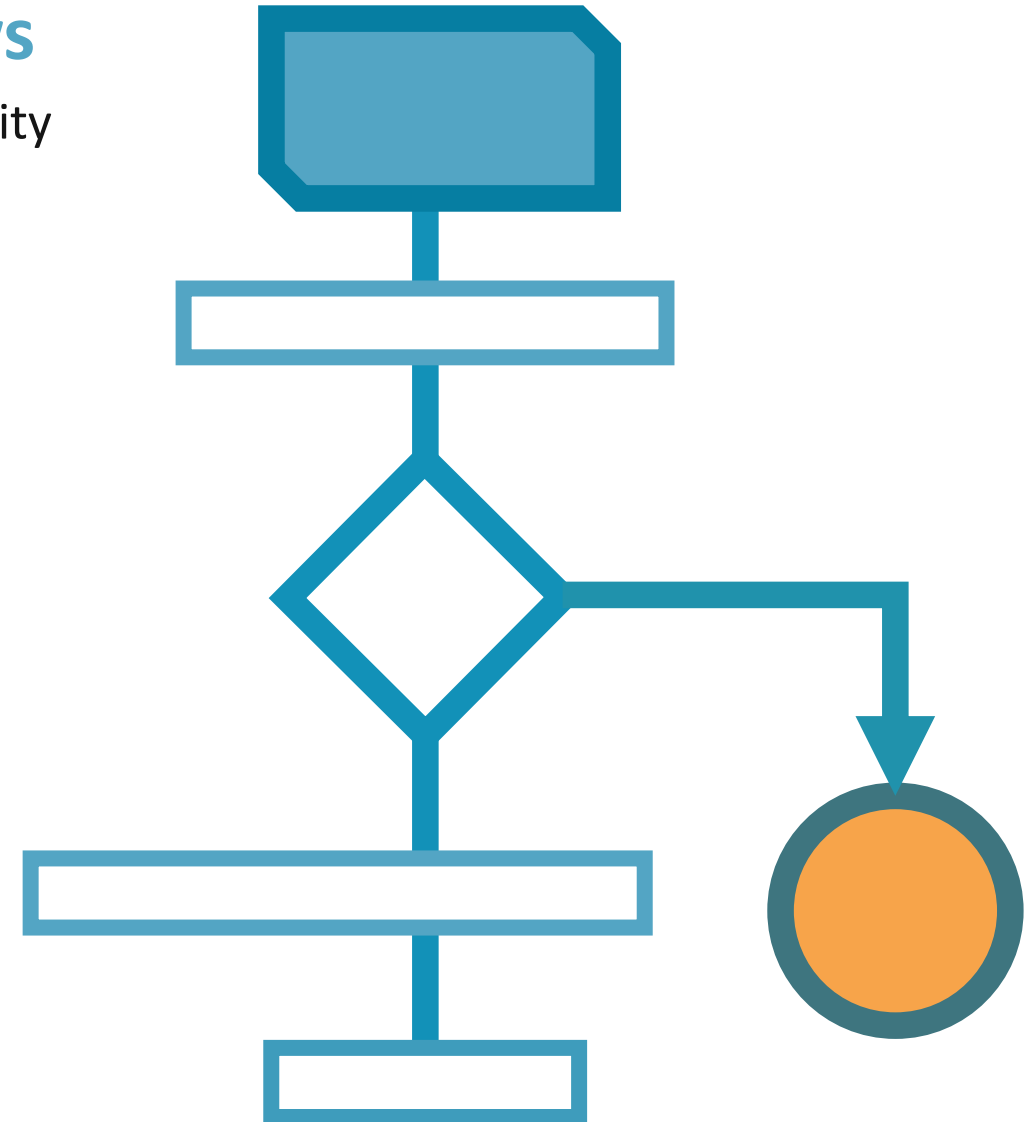
Periodic Reviews

1, 3, 5-year Cycles

- Specify Lead Time and Reminder Interval

Is a new revision needed?

YES → Completion Options
- Single Review
- Force Change Request
- Force Workflow

NO ↓

Reset Date
- Refresh PDF
- Mark as Reviewed

New Revision

Interactive Procedure Training
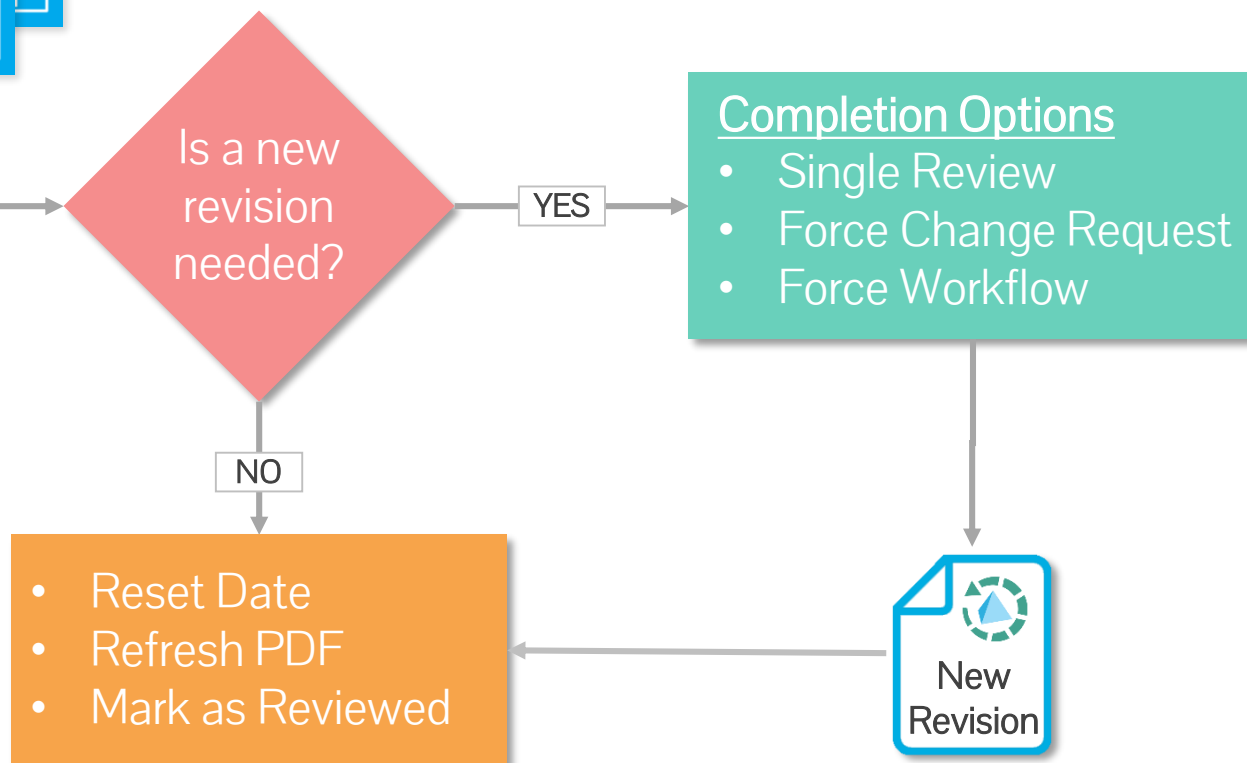
Computer-Based Training (CBT) for Procedures

- Automatic procedure output to interactive training

- Step-by-step walkthrough

- Text to speech support improves comprehension

- Step flagging/bookmarking

- Supports video and links to supporting media

- Validate learning with challenge quiz questions (12 types)

- Ability to submit procedure change requests at the step level

- API to SCORM compliant LMS for training administration

  – Organization or job assignments

  – Automated scheduling

  – Automated notifications

  – Revision training mode

- Additional interactive training via Performance Skills and Competency Assessment Checklists (paper & mobile)

Procedure CBT Navigation

ATR – Acid Vent Gas Scrubber Cleanup
1.0 debutanizer
1.1

OPEN debutanizer bypass valve, **V-100**.

2 Backpressure Regulator Valves
1 Relief Valves
3 Bypass Valves
4 Backpressure Valves
5 Anti-Siphon Valves

Progress bar:
Blue = procedure sections
Green = procedure steps

CBT Progress
Section Progress

Previous Step   **Next Step**

Exit

Volume
Text Size
Step Speed
Slow Medium Fast
☐ Disable Speech
📄 Print Procedure

Action Bar settings for volume, text size, step speed, and print

Section progress: green indicates complete

Flag Steps for review

Enter change request workflow comment (MOC)

Replay Step audio

Previous Step
Previous Section
Previous Incomplete Step
Effective Changes
Previous Flagged Step
Start of Procedure

Auto Play

Next Step
Next Section
Next Incomplete Step
Effective Changes
Next Flagged Step
End of Procedure

Flexible Output of Procedure Content

Managing procedure content as structured data allows us to address **execution efficiency**, **training**, and **competency** challenges by outputting the same content in multiple formats – paper or digital.

Mobile View

Default View
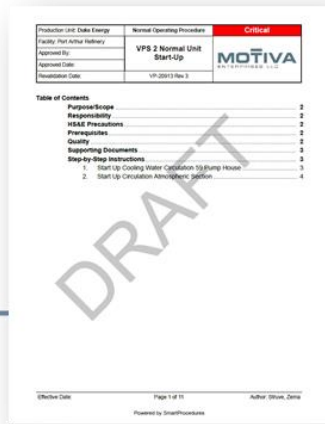
Checklist View

Pictures View

Skills Assessment/ Performance Demonstration

Desktop View

Computer-Based Training

Procedure Revision Management

Secure Document Controls and Historical Archiving

- Provides mission critical document security

- Maintains all revision history, change requests, workflow reviews and writer comments

- Side-by-side redline comparison

- Roles include user access, writer, verifier, reviewer, task assignee, approver, executor and organizational supervisor

- Accessibility levels indicate if procedures are in active workflow or temporarily replaced or expired

- Accessibility controls based on organization and role-based security privileges

Assets	User	Organization
Document Controls	**Procedure Components**	**Accessibility Roles**
Versioning	Sections	Author
Version Comparison	Steps	Supervisor
Secure Access (Roles)	Equipment	Reviewer
Accessibility Notification	Operating Limits	Implementor
	Procedure Properties	Executor
	Attachments	

Procedure Status Options

| New | Under Review | Approved | Effective | Archived |

SmartProcedures Mobile

Multi-Platform Procedure Execution and Tracking

- Perform procedures individually or collaboratively with sequential or parallel distributed team task execution

- Real-time collaborative event viewing and tracking of critical operations data (including rounds/readings capture)

- Employ device capabilities during execution (user/date/time, camera, microphone, GPS)

- Session joining and completion tracking

- In-app productivity tools

- Integrated change request

- Links to supporting info/media

- Data analytics and reporting
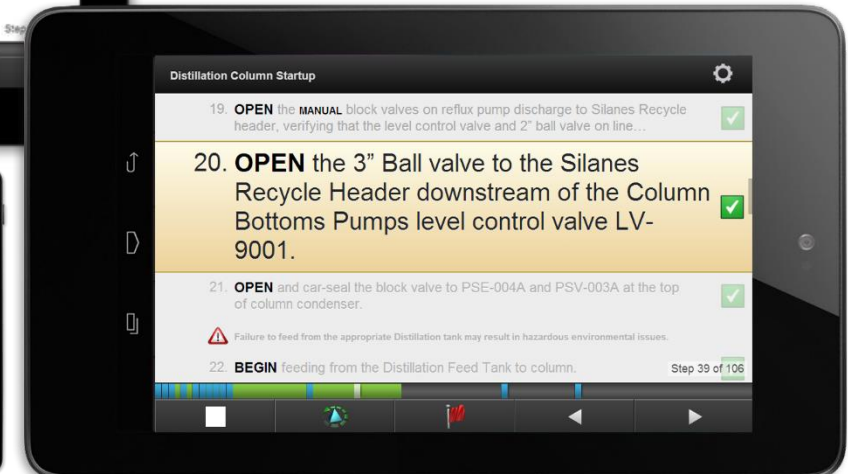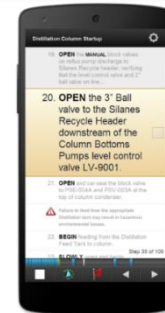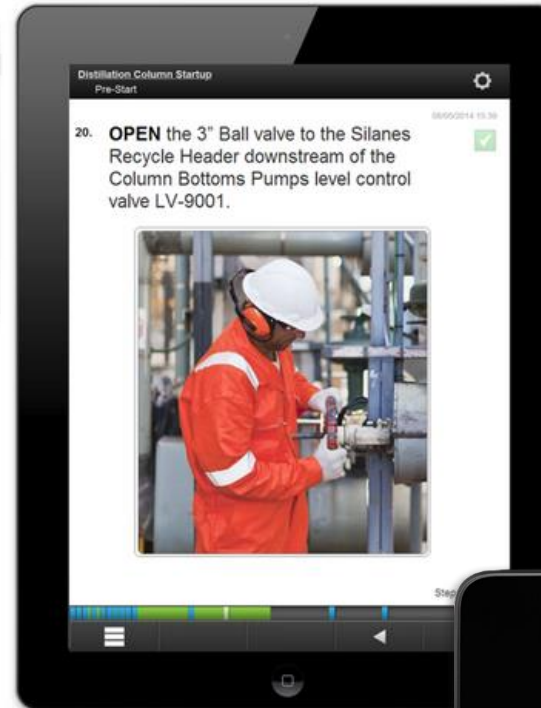
Disconnected:
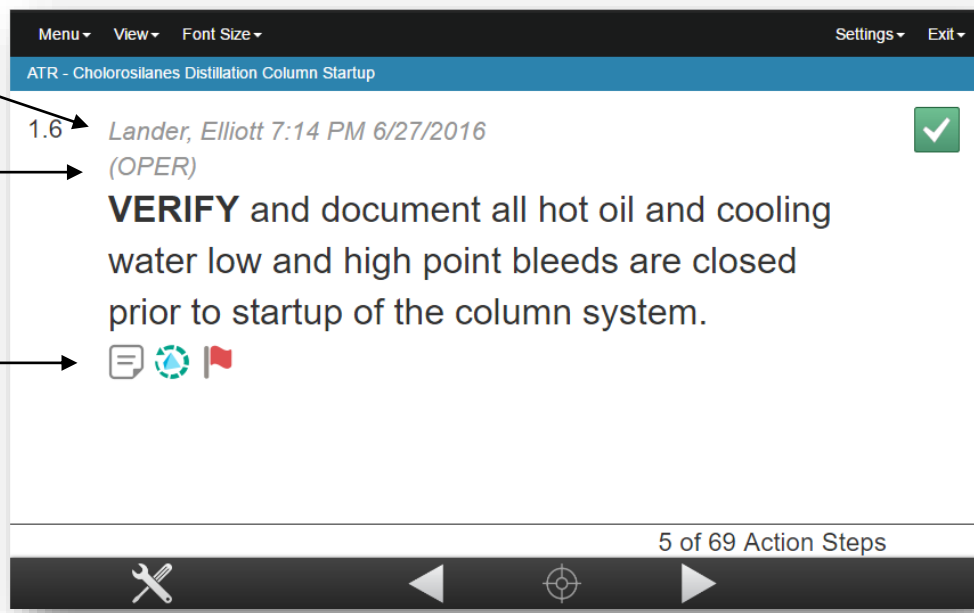**Native Windows-based app for disconnected single-user execution**

Connected:
HTML5 browser-based app for collaborative team execution
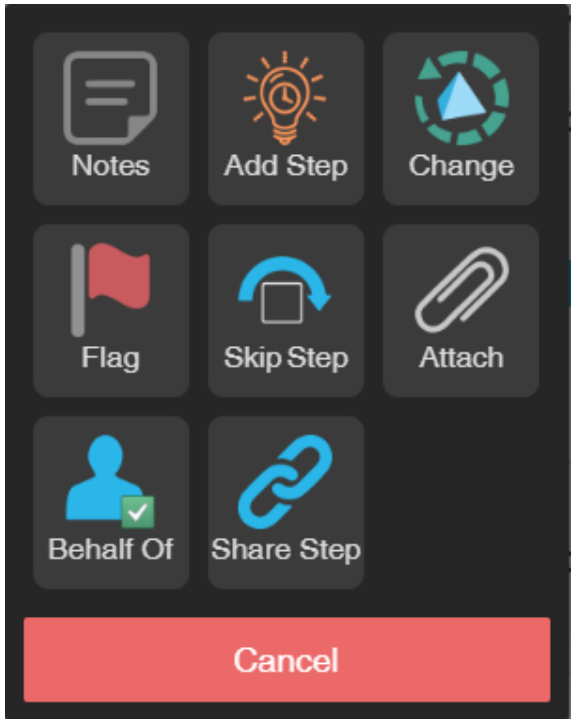
Elements of Mobile Steps

Sign-off Data

Role

Step Actions

Menu▾ View▾ Font Size▾   Settings▾ Exit▾

ATR - Cholorosilanes Distillation Column Startup

1.6 *Lander, Elliott 7:14 PM 6/27/2016*   ☑
     (OPER)
     VERIFY and document all hot oil and cooling
     water low and high point bleeds are closed
     prior to startup of the column system.

     📝 🔺 🚩

                                        5 of 69 Action Steps

     ✕   ◀   ⊕   ▶

Sign-off
• Operator
• Time-Date
• GPS
• *Bypass*
• *N/A*

Progress Information

Previous Step

Next Step

Return to Active Step

Notes   Add Step   Change

Flag   Skip Step   Attach

Behalf Of   Share Step

Cancel

Why Go Digital?

CURRENT State » TARGET State

CURRENT State

- Independent files
- Manual processes (slow costly resources)
- No standardized, centralized controls

- Non-integrated components
- Segmented processes (minimal visibility)
- Tasks get dropped, not tracked

- Hard-coded paper output only
- Not extensible to new technologies
- Content is not mobile-ready (digital)

- Procedures are one-size fits all
- No accounting for human factors
- Inconsistent quality (barrier to use/adoption)

TARGET State

- Relational database
- Automated processes (rapid accuracy)
- Global changes and electronic enforcement

- Unified integrated components
- Streamline processes
- Eliminate redundancies

- Any format, any device
- Discrete step processing is highly extensible
- Flexible, multi-platform outputs

- Procedure content is "fit-for purpose"
- Human factored (adapt to individual needs)
- Operators trust and value procedures

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Point of Production Qualities

Reliability

- "Getting it right, the first time...every time"
- **Consistent, repeatable, desirable results**
- Improved performance, safety, efficiency, quality, and predictability
- Mistake-proofing operations

Verifiable Compliance

- Auditing of compliance, performance, and quality
- **Procedural discipline: Adherence to standardized procedures & processes**
- Makes complex procedures easy to execute

Operational Feedback

- Data captured by operators at the time and place of task performance
- Assess performance, develop baseline trends, identify areas for improvement, assess quality, and measure the impact of process improvements
- **Enables cycle time and variance reduction**

Best Practice Capture

- Captures workforce improvement suggestions to identify best practices
- Promotes process standardization and performance enhancement
- **Builds and sustains a culture of continuous improvement**
- Mitigates variability in competency through onsite access to resources

Core Benefits Summary

1 OPERATIONAL EFFICIENCY

- Improve procedure-specific training and proactively manage workforce development.

- Competency assurance – ensure workers are doing the right thing, safely, every time (human performance).

- Execute tasks more effectively and consistently with quality procedures and supporting tools.

- Collaborative mobile procedure execution drives engagement.

- Continuous improvement – integrated change requests and data analytics drive accountability, innovation, and efficiency.

2 SAFETY and COMPLIANCE

- Maintain a safe workplace for employees and community.

- Reduce incident risk and associated economic losses.

- Improve regulatory compliance, reducing citations and associated penalties.

- Constant state of audit readiness with automatic activity tracking.

3 PROCEDURE ADMINISTRATION

- Speed procedure development and review/approval administration while reducing costs.

- Improve procedure accuracy, consistency, and accessibility.

- Free procedure administrators to focus on more important tasks like quality content and training.

- Automated procedure change workflows improve visibility and accountability of reviewers, approvers, and action owners.